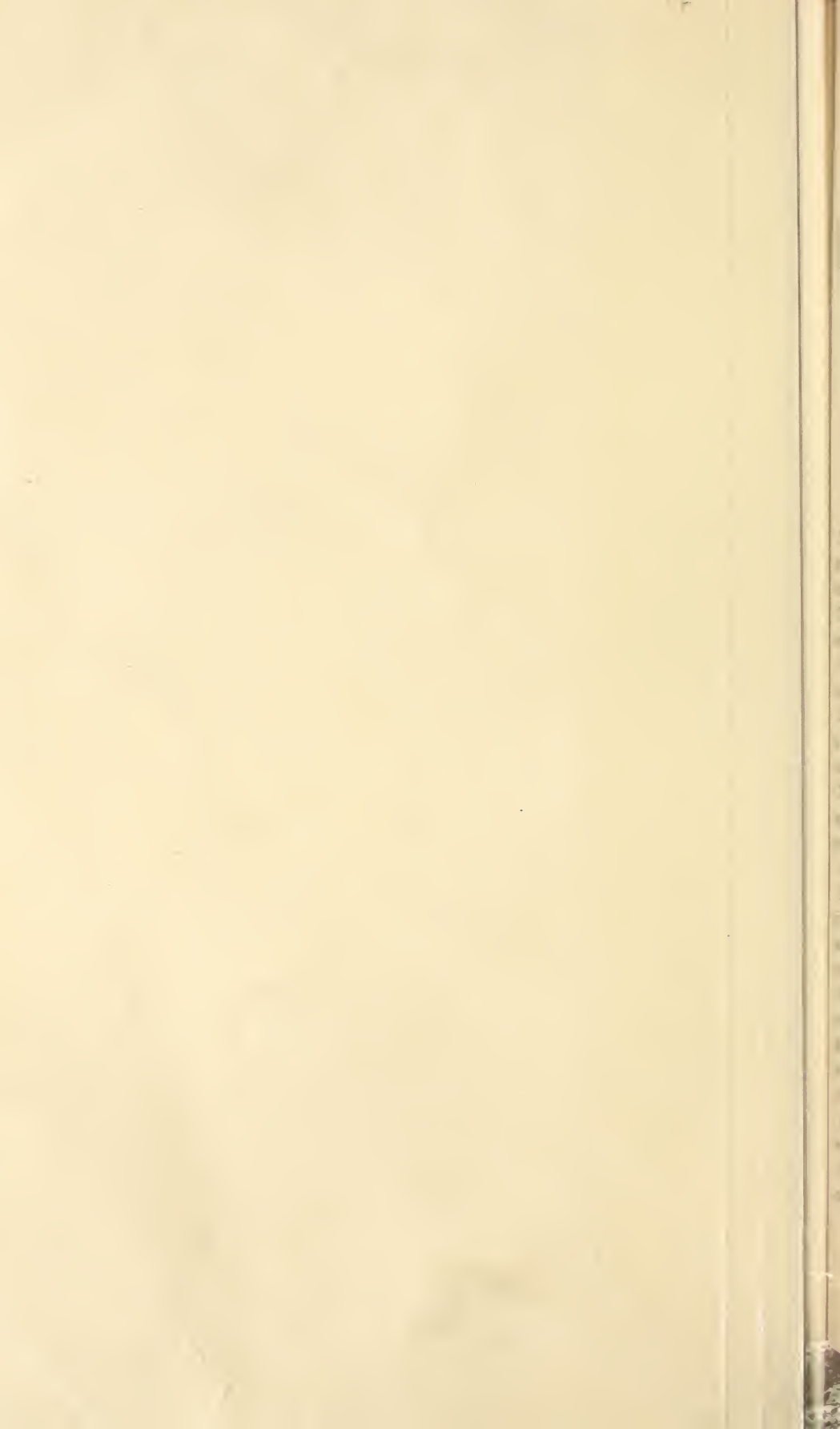


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MAINE AGRICULTURAL EXPERIMENT STATION.

BULLETIN No. 7.

SECOND SERIES.

INSPECTION OF FERTILIZERS.

W. H. JORDAN, Director.

J. M. BARTLETT, L. H. MERRILL, Chemists.

The Maine Legislature enacted at the session of 1893, a new law for the regulation of the sale and analysis of commercial fertilizers.

This change of law was sought in order to accomplish two objects :

1. The providing of funds that can be legally used, sufficient to pay the expenses of a proper inspection.
2. A provision whereby information as to the composition of the goods offered for sale can be given to the would-be purchaser at an earlier date than has heretofore been possible.

This law makes the following requirement upon manufacturers, importers or dealers who propose to sell or offer for sale their goods in the States. These briefly stated are :

1. Marking the bags properly.
2. Filing annually a certificate with the director of the Station giving the manufacturer's or dealer's name, place of business, place of manufacture, name of brand of fertilizer and the guaranteed composition of the same.
3. Depositing annually, unless excused by the director under certain conditions, a sample of fertilizer, with an accompanying affidavit that this sample "corresponds within reasonable limits to the fertilizer which it represents." These samples are designated in this bulletin as "manufacturers' samples."
4. The annual payment of an analysis fee of fifteen dollars for every brand of complete fertilizer licensed.
5. All brands of which thirty tons or more are not sold are exempt from the last provision.

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In accordance with the foregoing requirements, sixteen companies representing fifty-eight brands of fertilizers have complied with the law, and the brands mentioned below can be sold legally in the state to the extent of thirty tons or more during the year 1894.

The analyses which appear here are those made from manufacturers samples, which are deposited under affidavit that they are reasonably near in composition to the corresponding brands found in the market. There is every reason why purchasers may confidently expect the goods they buy to be fairly represented by these samples.

The figures which are given as the percentages of valuable ingredients guaranteed by the manufacturers are the minimum percentages of the guarantee. If, for instance the guarantee is 2 to 3 per cent. of nitrogen, it is evident that the dealer can not be held to have agreed to furnish more than 2 per cent., and so this percentage is taken as the actual guarantee. The figures under the head of "found" are those showing the actual composition of the samples deposited.

It will be seen that no estimated commercial valuation has been given to the various brands of goods here represented. This is due in part to the fact that the trade values for 1894 have not yet been agreed upon. If any one wishes to calculate the valuation he can do so by using the prices adopted for 1893, which are as follows:

Nitrogen,	-	-	-	-	-	17 1-2 cents.
Soluble phosphoric acid,	-	-	-	-	-	6 1-2 "
Reverted	"	"	-	-	-	6 "
Insoluble	"	"	-	-	-	2 "
Potash, as muriate,	-	-	-	-	-	4 1-2 "
Potash, as sulphate,	-	-	-	-	-	5 1-2 "

The commercial valuation will be accurate enough as a means of comparison if the following rule is adopted:

Multiply 17 1-2 cents by the percentage of nitrogen "found" and this product by twenty;

Multiply 6 1-2 cents by the percentage of available phosphoric acid found and the product by twenty;

Multiply 2 cents by the percentage of insoluble phosphoric acid found and the product by twenty;

Multiply 5 cents by the percentage of potash found and this product by twenty. The sum of these four final products will be the commercial valuation on the basis taken.

The valuation will be useful only as a means of determining whether one fertilizer has a selling price greater than another in proportion to some standard of valuation. *Such commercial valuations do not necessarily measure the relative value for use on a particular farm.*

MANUFACTURERS WHO HAVE COMPLIED WITH THE LAW FOR THE
YEAR 1894.

Bowker Fertilizer Co., Boston, Mass., eight brands, manufactured at Brighton, Mass., and Elizabeth Port, N. Y.

Bradley Fertilizer Co., Boston, Mass., four brands, manufactured at No. Weymouth, Mass.

Clark's Cove Fertilizer Co., New York, N. Y., or Boston, Mass., four brands, manufactured at New York, N. Y., or Boston, Mass.

Cleveland Dryer Co., Boston, Mass., three brands, manufactured at Cleveland, O., or Boston, Mass.

Crocker Fertilizer and Chemical Co., Buffalo, N. Y., four brands, manufactured at Buffalo, N. Y.

Cumberland Bone Phosphate Co., Portland, Me., and Boston, Mass., four brands, manufactured at Boothbay Harbor, Me.

E. Frank Coe Co., New York, N. Y., six brands, manufactured at New York, N. Y.

F. S. Farrar & Co., Bangor, Me., two brands, manufactured at Bangor, Me.

Great Eastern Fertilizer Co., Rutland, Vt., four brands, manufactured at New York, N. Y.

Henry F. Tucker, Boston, Mass., one brand, manufactured at Barren Island, N. Y.

Nash Manufacturing Co., South Brewer, Me., two brands, manufactured at South Brewer, Me.

Pacific Guano Co., Boston, Mass., two brands, manufactured at Boston, Mass.

Quinnipiac Co., New York, N. Y., four brands, manufactured at Union Landing, N. J.

Sagadahoc Fertilizer Co., Bowdoinham, Me., three brands, manufactured at Bowdoinham, Me.

Standard Fertilizer Co., Boston, Mass., three brands, manufactured at Duxbury, Mass.

Williams & Clark Fertilizer Co., New York, N. Y., and Boston, Mass., four brands, manufactured at Cataract, N. J.

DISCRIPTIVE LIST OF FERTILIZERS LICENSED AND ANALYZED 1894.

Station Number.	Brand.	Manufacturer.	Place of Business.
1089	Americus Phosphate.....	Williams & Clark Fertilizer Co.....	Boston, Mass.
1090	Americus Potato (and Tobacco) Manure	" " " "	" "
1098	Ammoniated Bone Superphosphate	E. Frank Coe Co.....	New York, N. Y.
1079	Bay State Fertilizer.....	Clark's Cove Fertilizer Co.....	New York, N. Y. or Boston, Mass.
1080	Bay State Fertilizer, G. G.....	" " " "	" "
1082	Bay State Fertilizer, Seeding Down	" " " "	" "
1115	Bowker's Ammoniated Dissolved Bone	Bowker Fertilizer Co	Boston, Mass.
1119	" Bone and Potash, Square Brand.....	" " " "	" "
1117	" Farm and Garden Phosphate	" " " "	" "
1114	" Hill and Drill Phosphate.....	" " " "	" "
1116	" Potato and Vegetable Manure.....	" " " "	" "
1118	" Sure Crop Phosphate	" " " "	" "
1070	Bradley's Complete Manure for Potatoes and Vegetables	Bradley Fertilizer Co	" "
1071	" Eureka Fertilizer.....	" " " "	" "
1069	" Potato Manure.....	" " " "	" "
1068	" X. L. Superphosphate	" " " "	" "

DISCRIPTIVE LIST OF FERTILIZERS LICENSED AND ANALYZED 1894.

Station Number.	Brand.	Manufacturer.	Place of Business.
1093	Cleveland Potato Phosphate.....	Cleveland Dryer Co.....	Boston, Mass.
1094	" Seeding Down Fertilizer.....	"	" "
1092	" Superphosphate	"	" "
1102	Columbian Brand Amm. Bone Superphosphate.....	E. Frank Coe Co.....	New York, N. Y., and Boston, Mass.
1084	Concentrated Phosphate for Potatoes.	Cumberland Bone Phosphate Co	Portland, Me.
1107	Crocker's Corn Phosphate.....	Crocker Fertilizer and Chemical Co....	Buffalo, N. Y.
1109	" New Rival Amm. Superphosphate.....	"	" "
1108	" Potato, Hop and Tobacco Phosphate	"	" "
1110	" Superior Rye and Oats Fertilizer.....	"	" "
1086	Cumberland Potato Fertilizer	Cumberland Bone Phosphate Co	Boston, Mass., and Portland, Me.
1087	" Seeding Down Fertilizer	"	" "
1085	" Superphosphate.....	"	" "
1122	Dirigo Fertilizer.....	Sagadahoc Fertilizer Co.....	Bowdoinham, Me.
1124	Extra Raw Bone.....		
1123	Farmers' Friend Manure.....		
1125	Farrar's Fertilizer.	F. S. Farrar & Co.....	Bangor, Me.

DISCRIPTIVE LIST OF FERTILIZERS LICENSED AND ANALYZED 1894.

Station Number.	Brand.	Manufacturer.	Place of Business.
1126	Farrar's Potato Fertilizer.....	F. S. Farrar & Co.....	Bangor, Me.
1097	Grass and Grain Fertilizer	E. Frank Coe Co.....	New York, N. Y.
1104	Great Eastern General Corn Phos-phate	Great Eastern Fertilizer Co.....	Rutland, Vt.
1103	" " Fertilizer	" "	" "
1106	" " Grass and Oats Phosphate.....	" "	" "
1105	" " Potato Manure.....	" "	" "
1099	High Grade Amm. Bone Superphosphate	E. Frank Coe Co.....	New York, N. Y.
1111	" " Potato Fertilizer.....	" "	" "
1088	" " Special	Williams & Clark Fertilizer Co.....	New York, N. Y., and Boston, Mass.
1081	King Phillip Alkaline Guano	Clark's Cove Fertilizer Co.....	New York, N. Y., or Boston, Mass.
1095	Nobsque Guano.....	Pacific Guano Co.	Boston, Mass.
1083	Original Bay State Bone Superphosphate	Henry F. Tucker	" "
1072	Quinnipiac Market Garden Manure.....	The Quinnipiac Co.....	New York, N. Y., Boston, Mass.
1073	" Phosphate	" "	" "
1074	" Potato Manure.....	" "	" "
1075	" Seeding Down Manure.....	" "	" "

DISCRIPTIVE LIST OF FERTILIZERS LICENSED AND ANALYZED 1894.

Station Number.	Brand.	Manufacturer.	Place of Business.
1091	Royal Bone Phosphate	Williams & Clark Fertilizer Co.	New York, N. Y., and Boston, Mass.
1120	Sagadahoc Superphosphate	Sagadahoc Fertilizer Co.	Bowdoinham, Me.
1095	Soluble Pacific Guano	Pacific Guano Co.	Boston, Mass.
1101	Special Potato Fertilizer	E. Frank Coe Co.	New York, N. Y.
1121	Special Potato Fertilizer	Sagadahoc Fertilizer Co.	Bowdoinham, Me.
1078	Standard A. Brand (Seeding)	Standard Fertilizer Co.	Boston, Mass.
1076	" Fertilizer	" " "	" "
1077	" Guano	" " "	" "
1113	Stockbridge Corn, Grain and Fodder Corn Manure...	Bowker Fertilizer Co.	" "
1112	" Potato and Vegetable Manure	" " "	" "

ANALYSES OF MANUFACTURERS' SAMPLES, 1894.

Station Number.	Brand.	Moisture.	Nitrogen.		Phosphoric Acid.						Potash.		Station Number.	
			% Found.	% Guaranteed.	Soluble.		% Reverted.	% Insoluble.	Avaliable.		% Total.	% Guaranteed.		
					%	%			% Found	% Avaliable.				
1089	Americus Phosphate.....	12.32	2.80	3.60	7.85	1.65	.79	9.50	9.00	10.29	10.00	2.63	2.00	1089
1090	Americus Potato (and Tobacco) Manure.....	14.72	2.24	2.50	8.70	1.56	.84	10.26	8.00	11.10	9.00	3.29	3.00	1090
1098	Ammoniated Bone Superphos. (Standard grade)...	9.99	1.73	1.50	6.88	2.48	2.70	9.36	8.00	12.06	.....	1.33	1.35	1098
1079	Bay State Fertilizer.....	12.48	2.72	3.00	8.10	1.57	.96	9.67	9.00	10.63	10.00	2.65	2.00	1079
1080	Bay State Fertilizer, G. G.....	12.51	2.36	2.25	7.38	2.34	1.81	9.72	8.00	11.53	10.00	2.62	2.00	1080
1082	Bay State Fertilizer, Seeding Down	9.48	2.33	1.25	7.18	2.55	1.89	9.73	8.00	11.62	10.00	2.59	2.00	1082
1115	Bowker's Amm. Dissolved Bone	13.64	1.88	1.50	5.32	2.51	2.05	7.83	8.00	9.88	10.00	2.17	2.00	1115
1119	“ Bone and Potash, Square Brand.....	5.06	1.79	1.50	.....	6.40	7.19	6.40	5.00	13.59	12.00	2.21	2.00	1119
1117	“ Farm and Garden Phosphate.....	13.24	1.86	1.50	5.27	3.01	1.79	8.28	8.00	10.07	10.00	2.21	2.00	1117
1114	“ Hill and Drill Phosphate.....	14.00	2.60	2.50	7.36	1.87	3.08	9.23	9.00	12.31	12.00	2.52	2.00	1114
1116	“ Potato and Vegetable Manure.....	10.86	2.54	2.50	3.79	2.54	4.31	6.33	8.00	10.64	10.00	4.42	4.00	1116
1118	“ Sure Crop Phosphate	14.46	1.02	.75	4.09	3.75	4.07	7.84	8.00	11.91	10.00	1.16	1.00	1118
1070	Bradley's Complete Manure for Potatoes and Vege tables.....	6.55	3.91	4.50	7.25	2.39	.50	9.64	8.00	10.14	9.00	7.35	6.00	1070

Station Number.	Brand.	Moisture.	Nitrogen.		Phosphoric Acid.						Potash.		Station Number.	
			% Found.	% Guaranteed.	% Soluble.	% Reverted.	% Insoluble.	% Available Found.	% Available Guaranteed.	% Total Found.	% Total Guaranteed.	% Found.		% Guaranteed.
1071	Bradley's Eureka Fertilizer.....	10.40	2.06	2.00	5.56	2.02	7.29	7.58	5.00	14.87	10.00	1.89	2.00	1071
1069	" Potato Manure.....	9.22	2.69	3.00	5.69	2.02	2.21	7.71	5.00	9.92	8.00	5.82	5.00	1069
1068	" X. L. Superphosphate.....	14.16	2.76	2.00	8.51	2.00	.97	10.51	5.00	11.48	10.00	2.47	2.00	1068
1093	Cleveland Potato Phosphate.....	14.47	2.16	2.05	8.83	1.64	.97	10.47	8.00	11.44	10.00	3.21	3.00	1093
1094	" Seeding Down Fertilizer.....	8.94	1.65	1.65	6.25	2.89	2.39	9.14	5.00	11.53	10.00	2.23	2.00	1094
1092	" Superphosphate	12.25	2.39	2.05	7.38	2.51	1.92	9.89	9.00	11.81	11.00	2.71	2.00	1092
1102	Columbian Brand Amm. Bone Superphos.	8.92	1.33	1.00	7.39	2.18	2.88	9.57	9.00	12.45	.....	1.92	1.85	1102
1084	Concentrated Phosphate for Potatoes.....	9.74	4.00	4.00	7.16	2.24	.51	9.40	10.00	9.91	12.00	7.24	5.00	1084
1107	Crocker's Corn Phosphate	12.84	2.50	2.00	6.05	2.49	1.91	8.54	10.00	10.45	11.00	2.27	1.60	1107
1109	" New Rival Amm. Superphos.	13.79	2.08	1.20	7.05	2.31	1.42	9.36	10.00	10.78	11.00	2.04	1.60	1109
1108	" Potato, Hop and Tobacco Phosphate	13.31	3.03	2.00	6.54	2.15	1.48	8.69	10.00	10.17	11.00	3.45	3.25	1108
1110	" Superior Rye and Oats Fertilizer.....	12.61	1.91	.82	5.25	1.92	1.24	7.17	8.00	8.41	9.00	2.37	2.00	1110
1086	Cumberland Potato Fertilizer	14.64	2.21	2.50	8.74	1.57	1.10	10.31	9.00	11.41	11.00	3.16	3.00	1086

ANALYSES OF MANUFACTURERS' SAMPLES, 1894.

Station Number.	Brand.	Moisture.	Nitrogen.		Phosphoric Acid.						Potash.		Station Number.	
			% Found.	% Guaranteed.	% Soluble.	% Reverted.	% Insoluble.	% Available.	% Found.	% Total.	% Guaranteed.	% Found.		% Guaranteed.
1087	Cumberland Seeding Down Fertilizer.....	12.71	1.27	1.50	6.08	2.86	2.33	8.94	8.00	11.27	12.00	2.27	2.00	1087
1085	“ Superphosphate	12.64	2.36	2.50	7.52	2.35	1.89	9.87	8.00	11.76	10.00	2.74	2.00	1085
1122	Dirigo Fertilizer.....	8.42	1.84	2.00	1.24	1.53	3.52	2.77	1.00	6.29	11.00	4.90	3.00	1122
1124	Extra Raw Bone.....	10.35	3.11	.....	.....	.....	.....	.....	.....	19.27	.....	.....	.....	1124
1123	Farmer's Friend Manure.....	21.50	2.44	.....	.....	.89	4.07	.....	.....	4.96	.....	.98	.....	1123
1125	Farrar's Fertilizer	8.98	2.56	2.50	3.24	8.26	4.25	11.50	9.50	15.75	11.00	1.63	2.00	1125
1126	“ Potato Fertilizer.....	8.97	2.33	2.50	3.03	7.19	5.99	10.22	9.50	16.21	11.00	3.32	3.00	1126
1097	Grass and Grain Fertilizer.....	10.61	.91	1.00	7.04	3.01	3.84	10.05	9.00	13.89	.....	1.79	1.35	1097
1104	Great Eastern General Corn Phosphate	13.59	3.06	3.00	3.84	5.36	.74	9.20	8.00	9.94	8.00	3.43	2.00	1104
1103	“ “ Fertilizer.....	13.78	1.10	.80	.69	9.25	2.26	9.94	8.00	12.20	8.00	4.72	4.00	1103
1106	“ “ Grass and Oats Phosphate...	8.70	.....	.....	4.11	6.88	4.08	10.99	11.00	15.07	11.00	2.15	2.00	1106
1105	“ “ Potato Manure	9.78	2.35	2.00	5.14	4.90	.68	10.04	8.00	10.72	8.00	5.71	4.00	1105
1099	High Grade Amm. Bone Superphos.	9.06	2.11	2.00	7.07	2.59	2.14	9.66	9.00	11.80	2.01	1.85	1099

AGRICULTURAL EXPERIMENT STATION.

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Station Number.	Brand.	Moisture.		Nitrogen.		Phosphoric Acid.						Potash.		Station Number.
		% Found.	% Guaranteed.	% Found.	% Guaranteed.	% Soluble.	% Reverted.	% Insoluble.	% Available.	% Available.	% Total.	% Found.	% Guaranteed.	
1111	High Grade Potato Fertilizer.....	8.13	2.28	2.00	5.04	1.93	2.89	6.97	78.00	9.86	.....	6.45	6.00	1111
1088	“ “ Special	9.61	3.97	4.50	7.10	2.50	.45	9.60	7.00	10.05	8.00	7.26	7.00	1088
1081	King Phillip Alkaline Guano.....	11.52	1.79	1.50	6.52	1.74	1.05	8.26	6.50	9.31	8.00	3.66	3.00	1081
1096	Nobsque Guano.....	12.24	1.23	1.40	6.23	2.65	2.44	8.91	9.00	11.35	10.00	2.25	2.00	1096
1083	Original Bay State Bone Superphos.	9.30	2.01	2.00	6.77	2.68	2.25	9.45	9.00	11.70	9.00	2.20	3.00	1083
1072	Quinnipiac Market Garden Manure	9.79	3.89	4.00	7.38	2.05	.65	9.43	8.00	10.08	9.00	7.47	7.00	1072
1073	“ “ Phosphate	12.26	2.74	3.00	7.91	1.47	1.11	9.38	9.00	10.49	10.00	2.72	2.00	1073
1074	“ “ Potato Manure.....	9.34	2.71	3.00	5.85	1.82	2.26	7.67	6.00	9.93	7.00	5.80	5.00	1074
1075	“ “ Seeding Down Manure.....	12.86	1.23	1.00	6.59	2.87	2.26	9.46	9.00	11.72	10.00	2.26	2.00	1075
1091	Royal Bone Phosphate	12.53	1.26	1.25	6.20	3.11	2.23	9.31	7.00	11.54	8.00	2.26	2.00	1091
1120	Sagadahoc Superphosphate.....	15.58	2.75	2.75	5.63	2.30	1.64	7.93	9.57	9.57	.....	2.67	2.75	1120
1095	Soluble Pacific Guano.....	12.30	2.37	2.25	7.33	2.42	1.85	9.75	8.50	11.60	10.00	2.61	2.00	1095
1101	Special Potato Fertilizer	8.88	1.81	1.75	7.19	2.17	2.53	9.36	9.00	11.89	.....	2.38	3.50	1101

ANALYSES OF MANUFACTURERS' SAMPLES, 1894.

Station Number.	Brand.	Moisture.	Nitrogen.		Phosphoric Acid.							Potash.		Station Number.
			% Found.	% Guaranteed.	% Soluble.	% Reverted.	% Insoluble.	% Available.	% Available.	% Total.	% Found.	% Total.	% Guaranteed.	
1121	Special Potato Fertilizer	13.87	2.53	3.00	4.87	2.10	1.60	6.97	8.57	8.57	.....	5.74	6.00	1121
1078	Standard A Brand (Seeding)	12.62	1.27	1.50	6.70	2.72	2.26	9.42	8.00	11.68	12.00	2.37	2.00	1078
1076	Standard Fertilizer	12.46	2.44	2.00	7.36	2.64	1.96	10.00	8.00	11.96	10.00	2.67	2.00	1076
1077	“ Guano	11.32	1.75	1.50	6.59	2.02	1.09	8.61	6.00	9.70	8.00	3.69	3.00	1077
1113	Stockbridge's Corn, Grain and Fodder Corn Manure.	9.38	3.21	3.25	6.31	1.62	2.69	7.93	8.00	10.62	10.00	5.23	4.00	1113
1112	“ Potato and Vegetable Manure	10.67	3.43	3.25	6.08	1.63	2.04	7.71	6.00	10.35	8.00	6.73	7.00	1112

MAINE STATE COLLEGE, }
 ORONO, ME., Feb. 15, 1894. }

No. 1

